REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 21, 23, 25 and 27-45 are in the case.

I. SPECIFICATION

The specification has been amended to include customary headings, including a brief description of the drawings. No new matter is entered.

II. THE OBVIOUSNESS REJECTION

Claims 21, 23 and 25-44 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over DE 201 12 425 (DE'425) or US 2004/0050526 (US'526). The rejections are respectfully traversed.

As claimed, the invention provides a feeder element for use in metal casting, having a first end for mounting on a mould pattern, an opposite second end for receiving a feeder sleeve and a bore between the first and second ends defined by a stepped sidewall which comprises a first series of sidewall regions in the form of rings of increasing diameter interconnected and integrally formed with a second series of sidewall regions. The feeder element is irreversibly compressible in use whereby to reduce the distance between the first and second ends, wherein an initial crush strength in response to a force applied between the first and second ends is no more than 5000 N.

With regard to DE'425, the Action asserts that the hat-shaped metallic annulus 22 in DE '425 is compressible, a non-brittle material and the deformation can be non-

reversible when it is deformed beyond the elastic range. In contrast, claim 21 is directed to a feeder element for use in metal casting. The feeder element has a first end for mounting on a mold pattern, an opposite second end for receiving a feeder sleeve, and a bore between the first and second ends defined by a sidewall. The feeder element is compressible whereby in use to reduce the distance between the first and second ends.

Claim 21 requires the feeder element to be "compressible in use whereby to reduce the distance between said first and second ends". In DE'425, the feeder element does not meet this requirement, because the force required to compress it is greatly in excess of those pressures used to prepare a mold for a casting. This is acknowledged in DE'425 since page 4 of the English translation of DE'425 (previously provided) states:

> "The hat-shaped form of the annulus provides an additional advantage with its stiffening effect, so that the annulus offers adequate stability with respect to the stress occurring when moulding the feeder insert".

There is no disclosure in DE'425 that the breaker will be compressible in use. It is clearly intended to withstand the pressure of molding rather than compressing under it. Since the feeder element is designed for use with a feeder sleeve, damage would inevitably occur to the feeder sleeve before the DE'425 feeder element would compress.

The Action appears to assume that, if sufficient force is applied, compression will occur. Although this might be true, it should be noted that the expression "in use" implicitly requires the feeder element to function in the proposed application.

While it is believed that the term "compressible in use" distinguishes the present application over DE'425, claim 21 has been amended to incorporate the subject matter of claims 22 and 24, i.e. that the compression is non-reversible and that the initial crush strength is no more than 5000 N, to expedite prosecution. Such an amendment further distinguishes the present invention the breaker core of DE'425.

In further support of the differences between the present invention and DE'425, Applicant has prepared replicas of the feeder element described in DE'425 and tested their compression properties. Feeder elements were prepared from steel sheet having a thickness of either 0.8mm or 1.0mm (based on observations of feeder elements available in the market). The feeder element test pieces were tested by placing them between two parallel plates of a Hounsfield Compression Strength Tester, the bottom plate was fixed and the top plate reversed downwards via a mechanical screw thread mechanism at a constant rate of 13mm per minute. Graphs of force supplied against plate displacement were plotted and were submitted with the prior response. Corresponding graphs for filter elements of the present application are shown in Figures 21 and 23 and described on pages 22 and 23 of the present application.

Referring to Figures 21 and 23 of the present application, the initial crush strength of the feeder element is labelled A and ranges from around 800 to 4000 N. This is seen as a peak on the graph, since as force is increased there is minimal compression (associated with the natural flexibility in its unused and uncrushed state) until a critical force is applied (the initial crush strength), after which compression proceeds rapidly under a lower loading. In contrast, the graphs for the DE'425 feeder element do not have a peak corresponding to the initial crush strength, even though a

force of up to 10000 N was applied. This demonstrates that the initial crush strength for the DE'425 feeder element is greatly in excess of 10000 N.

With regard to the rejection over US'526, the Action asserts that the metallic tube 3 in US'526 is "compressible". In response, US'526 discloses a feeder system comprising a feeder head (1) and a tube (3). The tube is located between the feeder head and the mold cavity and, during the molding-on process and/or densification of the molding material (i.e. ramming up), the tubular body moves relative to either the feeder sleeve or the mould cavity, i.e. it telescopes. This is said to provide an optimally positioned breaking edge for easy and safe separation of the remaining feeder from the finished cast piece. There is no suggestion in US'526 that the tubular body compresses during use as required by the presently claimed invention. In this regard, attention is directed to paragraph [0037] of US'526 which states:

> "Of course, the wall of the tube must be sufficiently stable so as not to be destroyed during the densification of the molding material, to such an extent that no feedable connection exists any longer between the mold cavity and the feeder. For that reason, the preferred wall thickness of the tubular body depends on the type of material used."

Based on this, the crush strength of the metallic tube (3) cannot be the same as the system crush strength; it must be higher. Based on this it is clear that the metallic tube (3) would not be "compressible in use". Any such compression of the metallic tube would constitute failure of the feeding system.

In summary, one of ordinary skill would not have been motivated to arrive at the invention as now claimed based on the cited art. Absent any such motivation, it is clear

that a *prima facie* case of obviousness does not exist. Withdrawal of the obviousness rejections is accordingly respectfully requested.

III. CLAIM AMENDMENTS

The claims have been amended to further clarify the claimed invention, and claim 39 has been rendered independent. New method claim 45 is also presented for consideration. No new matter is entered.

Favorable action is awaited.

Respectfully submitted,

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